

Application No. 10/669,502

Docket No.: 22130-00030-US1

**REMARKS*****Introduction***

Receipt of the Office Action mailed May 5, 2005 is acknowledged. The claims have been amended in formal regards, support for which is found throughout the specification and claims as originally filed. No new matter has been added. Entry of the amendment and favorable reconsideration is earnestly solicited.

***Specification***

The Examiner has indicated that incorporated essential material in the specification by reference to an unpublished US application, foreign application or patent, or to a publication is improper. No information is currently deemed essential. Should the Examiner disagree, please notify the undersigned in the next Action.

***Claim Rejections – 35 USC §112***

Claims 1-80 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is respectfully traversed.

Regarding claims 1, 6, 7, 66 and 80, these claims have been amended along the lines helpfully suggested by the Examiner.

Regarding claim 3, the claimed “external faces” has been clarified.

Regarding claim 5, the antecedent basis of the phrase “said Al-Mg alloy sheet” has been provided.

Regarding claim 7, the phrase “and/or” means “either or both.” As well, it is now clear that this claim specifies that the alloy comprises either or both of Sc and Hf in the claimed amounts.

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Regarding claims 15 and 17-19, the antecedent basis of the phrase "said metal sheet" has been provided.

Regarding claims 43-63, the Examiner has taken the position that it is unclear what is meant by the phrase "suitable or otherwise used in". This language has been modified and is now believed to be clear within the meaning of 112.

Regarding claim 66, the relationship between the claimed "at least two external faces" has been clarified.

Regarding claim 72, the nature of the relationship between the layers, sheets and the faces has been amended. Regarding claim 74, it is unclear whether the second face is a sheet that must meet the thickness requirement of this claim.

Regarding claim 77, line 2, the term "products" has been deleted. Further the phrase "mechanical properties" has been deleted and "ultimate tensile strength and tensile yield strength" has been substituted therefore. A "glare-type composite laminated sandwich panel incorporating 2024T3" as well as its construction is well known to one of skill in the art. Hence this term is believed to meet 112.

Regarding claim 78, the spacing in the phrase "and / or" has been clarified. Also the phrase "without using clad sheets" is now believed to be clear.

In view of all these amendments, the present rejection under 112 has been overcome. Reconsideration and withdrawal of the rejection are earnestly solicited.

***Claim Rejections – 35 USC §102***

Claims 1, 3, 6, 7, 22, 24, 27, 28, 43, 45, 48, 49, 66, 67, 70, 71 and 77-78 were rejected under 35 USC §102(b) as allegedly being anticipated by Sobolev (US Patent No 5,219,629). This rejection is respectfully traversed for at least the following reasons.

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The Examiner has taken the position that Sobolev teaches panel laminates comprised of two non-heat treatable series 5000 aluminum alloy sheets that are separated by a resin, including epoxy resin, reinforced with glass fibers, and that such a teaching anticipates the cited claims. Applicants respectfully disagree. Namely, Sobolev's examples only disclose AA5052 aluminum alloy sheets. The Mg content of AA5052 is between 2.2 and 2.8 wt%, while as recited in rejected claims 1, 3, 6, 7, 22, 24, 27, 28, 43, 45, 48, 49, 66, 67, 70 and 71, the Mg content of at least one sheet must be from about 4% to about 6%. There is simply no teaching of such a sheet anywhere in Sobolev. Indeed, Sobolev teaches a metal component of the sandwich panel that is very broad, including metals such as steel, nickel, copper, titanium, zinc in addition to aluminum.

With regard to claims 77-78, there is no basis for a contention that Sobolev's product is within 12% of the ultimate tensile strength and the tensile yield strength of a Glare-type composite laminated sandwich panels incorporating 2024 T3. Indeed, because Sobolev uses a different type of sheet, the mechanical properties thereof including UTS and TYS will not be at the same levels as the claimed composite, especially because many of the metal panels taught by Sobolev are not even aluminum based.

The Examiner is therefore requested to reconsider and withdraw the outstanding rejection based on Sobolev.

***Claim Rejections – 35 USC §103***

Claims 1-7, 22-28, 43-49 and 65-79 were rejected under 35 USC 103(a) as allegedly being unpatentable over Schalkwuk (WO 98/53989). This rejection is respectfully traversed for at least the following reasons.

The Examiner has asserted that although Schalkwuk teaches composite laminates of aluminum alloy sheets separated by adhesive comprising glass fibers, the Examiner also admits that Schalkwuk does not exemplify non-heat treatable series 5000 alloys. Schalkwuk teaches that 5000 series alloys as well as other high strength aluminum alloys (AA2000, AA3000, AA6000 and AA7000) and with high strength other metals (steel alloys, titanium alloys, magnesium alloys and aluminium-matrix composites), (page 6 line 20 to 25).are effective. Schalkwuk does not mention anything specific with respect to 5000 series alloys used in a composite, much less a 5000 series alloy that has the claimed Mg content as instantly recited in

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claims 1-76. Nor would there be any basis that a composite of Schalkwuk has the claimed UTS and TYS as recited in claims 77-80. As such, under well established caselaw, it would not have been obvious to one of ordinary skill in the art at the time of the invention to fabricate a panel as claimed in any of the pending claims 1-80 given the teachings of Schalkwuk.

Furthermore, Applicants respectfully disagree with the Examiner's statement that "Shalkwuk suggests that panels formed with sheets of these alloys are effective, especially for corrosion resistance", because the exact teaching of Shalkwuk is "when superior corrosion resistance is desired, a sheet of AA5052 alloy may be included in the laminate" (page 6 lines 28-29). As noted above, the Mg content of AA5052 is between 2.2 and 2.8 wt%. The corrosion resistance properties of all AA5000 alloys cannot be considered equivalent. Indeed, the trend is that the higher the Mg content, the lower the corrosion resistance, and thus this statement does not encourage to select Al-Mg alloys with an Mg content from about 4 to about 6 wt% as claimed in claims 1-76.

And in addition, a problem that the present invention tries to solve is not only to use thin plates less sensitive to corrosion in composite laminated sandwich panels, but also to obtain composite laminated sandwich panels with mechanical characteristics comparable to the characteristics of known composite laminated sandwich panels made with sheets from AA2000 and AA7000 series alloys (see claims 77-80). According to the invention, it is preferable to optimize the mechanical properties by varying the chemical composition of the alloys in the composite rather than strain-hardening. It was found unexpectedly that sheets made of Al-Mg alloys with Mg contents from 4 to 6 wt% may exhibit toughness ( $K_{IC}$ ) comparable to the toughness of sheets made of 2024 alloy (see claims 19-21). This is directly related to the damage tolerance properties of the composite laminated panel according to the invention.

In conclusion, it would not have been obvious from Schalkwuk to one skilled in the art to select an Al-Mg alloy with Mg content from 4 to 6 wt%, nor would it have been obvious to prepare a composite having the properties recited in claims 77-80.

Claims 1-7, 22-28, 43-49 and 65-79 were rejected under 35 USC 103(a) as allegedly being unpatentable over Roebroeks (US Patent No. 5,547,735). This rejection is respectfully traversed for at least the following reasons.

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To wit, Roebroeks includes the exact same teaching about AA5000 as Schalkwuk. Hence, this rejection is improper for the very same reasons as advanced above. In this regard, col.1 lines 45 to 56 of Roebroeks are very close to page 6 line 21 to 29 of Schalkwuk. In fact Roebroeks disclosure is even more removed for the fact that Roebroeks focuses on impact resistance which is not a critical property for the pending application.

The rejection based on Roebroeks is therefore improper and should be withdrawn. The Examiner is respectfully requested to reconsider and withdraw the rejection.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 22130-00030-US1 from which the undersigned is authorized to draw.

Dated: September 1, 2005

Respectfully submitted,

By  44,100

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